SEISMOLOGICAL LABORATORY
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIFORNIA

REPORT OF PROGRESS

CONTRACT NASw-81

June 16, 1961 - December 16, 1961

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Activities during this quarter have been as follows:

"RANGER" EXPERIMENT

Follow through on production of the "Ranger" flight hardware with the required testing, and some minor modifications, have been the major activities in this area.

In addition to the four flight prototype seismometers supplied earlier, seven flight hardware units were ordered by the Jet Propulsion Laboratory (from separate hardware funding). All seven have now been completed, tested, and delivered. To allow for problem instruments, twelve were ordered from the vendor. The last of these was delivered on December 19 ready for heat soak and final assembly operations.

All spare units are being sterilized and subjected to the same flight acceptance tests as those delivered for flight. An operating recheck is made prior to storage in sealed delivery cases (see Fig. 1).

The analog data recorders mentioned in previous reports have been used in conjunction with one of the two tape playbacks to be supplied by the Jet Propulsion Laboratory. Operation is satisfactory; however, several minor modifications may be made. Fig. 2 shows the two recorder rack assemblies and one of the tape playback units.

Using one of the flight prototype "Ranger" seismometers a modification was made which adapts the instrument to vertical operation for gravity values up to that of earth. This modification provides space for batteries and telemetry electronics. One version (see Fig. 3) shows the motor removed from close proximity to the suspended magnet for more optimum performance. Conceivably these modified instruments fitted with extendable base, antenna, and parachute, would be useful for some planetary experiments as well as for air drop distribution on earth.

In the modified device stop-to-stop travel of the mass has been restricted to a fraction of that in the "Ranger" seismometer. This results in more uniform period over the range and permits operation at longer periods. While not having the impact survival capabilities of the "Ranger" seismometer, it is felt that this device could tolerate much rough treatment without protective fluid filling.

"SURVEYOR" EXPERIMENT

In October a Caltech group visited Lamont Geological Observatory for a discussion of the "Surveyor" development. Several Lamont people visited the Seismological Laboratory in December.

"PROSPECTOR" EXPERIMENT

Experimentation with the polar leveling-base assembly and logic circuitry for a three component seismometer package has

continued (Figs. 4a, b, c, d). Some degree of success has been achieved and at this writing has been leveling a two axis pendulum to an off-stop condition.

It appears that the advantages of minimum space, light weight, and geometric center suspension of leveling assembly may be offset by logic which is complicated compared to that for more conventional gimbaling.

A re-designed seismometer unit having no flexible lead connections from the mass is being built and should be tested soon.

December 20, 1961 F. E. Lehner

Figure 1

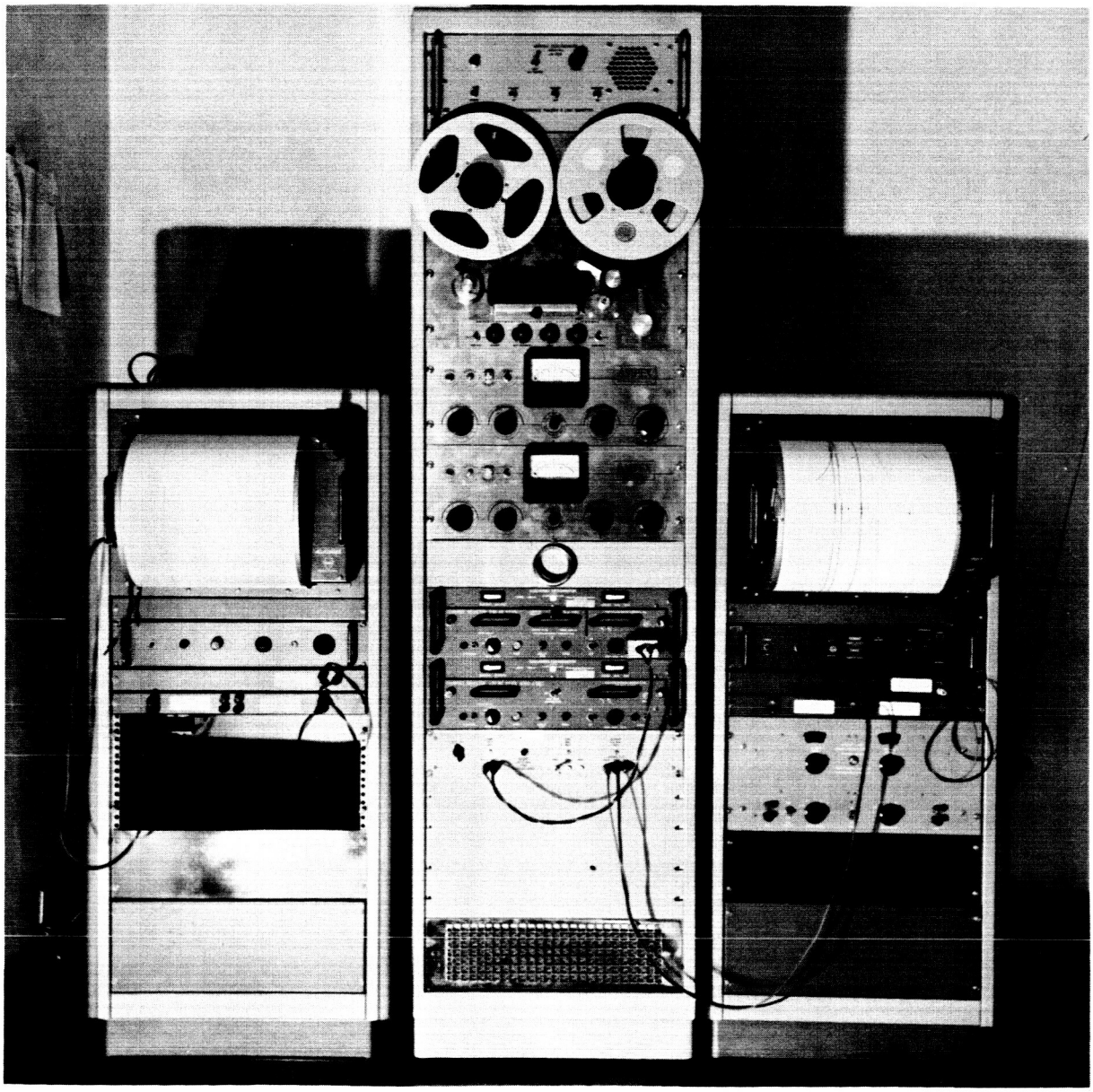


Figure 2

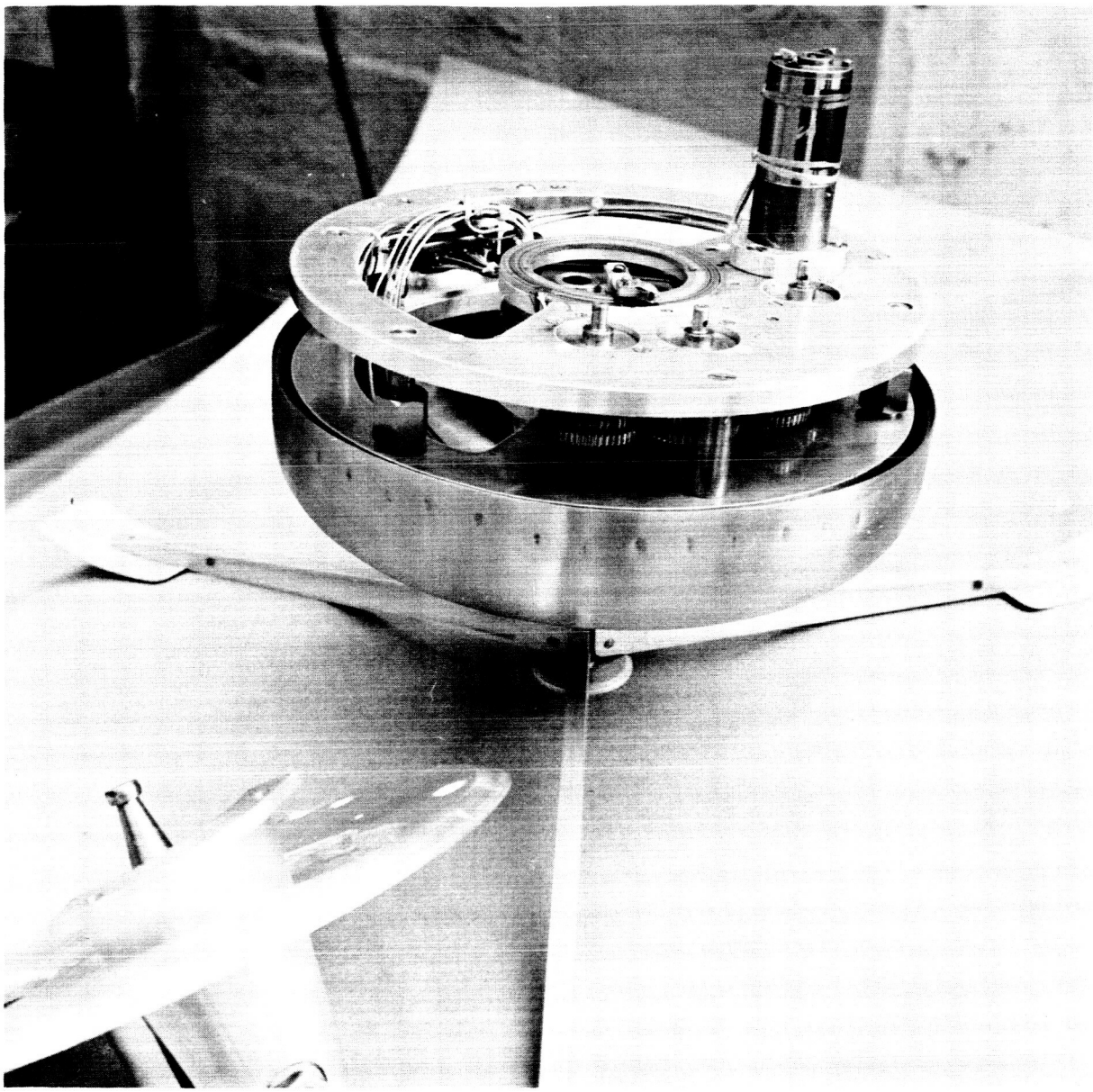


Figure 4a

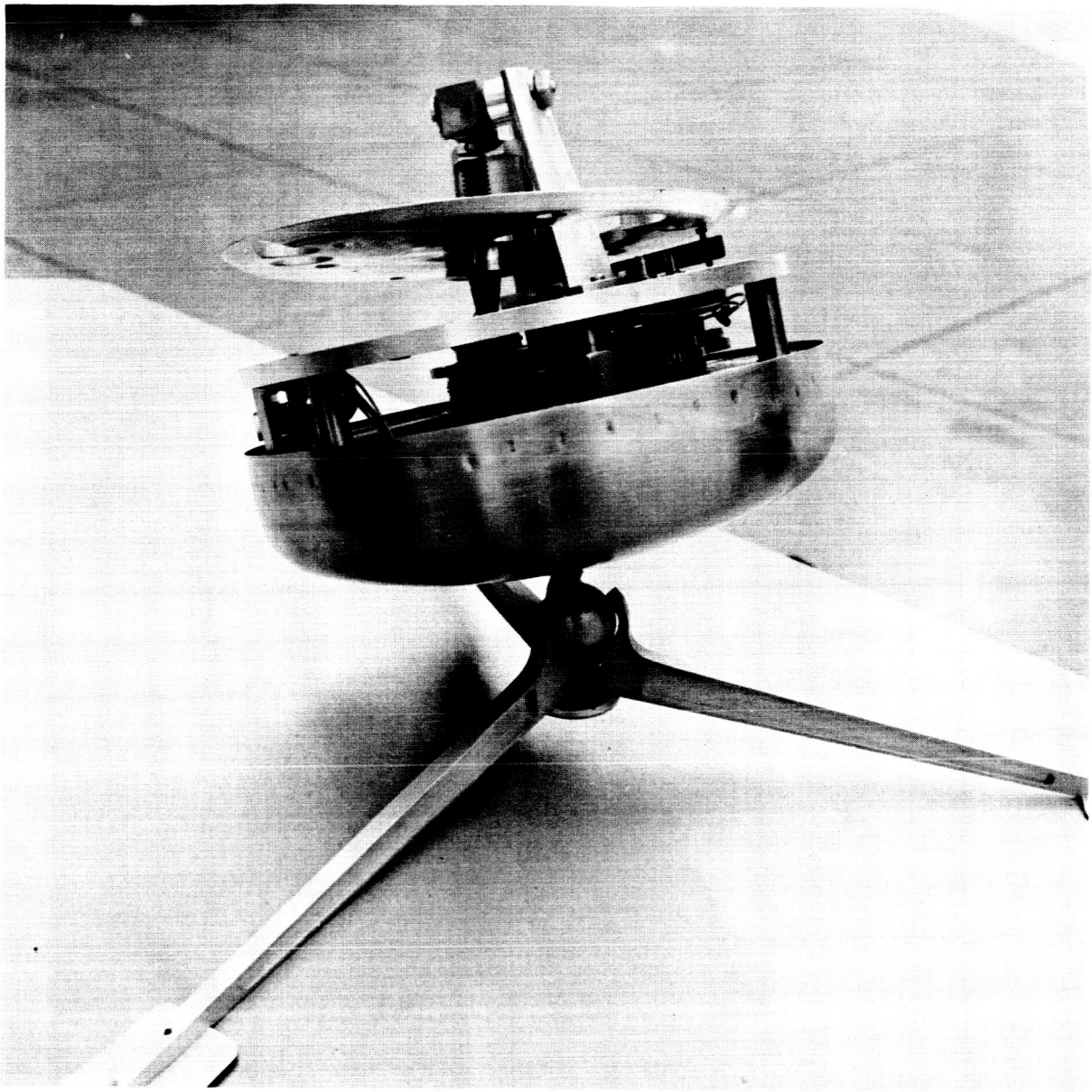


Figure 4b

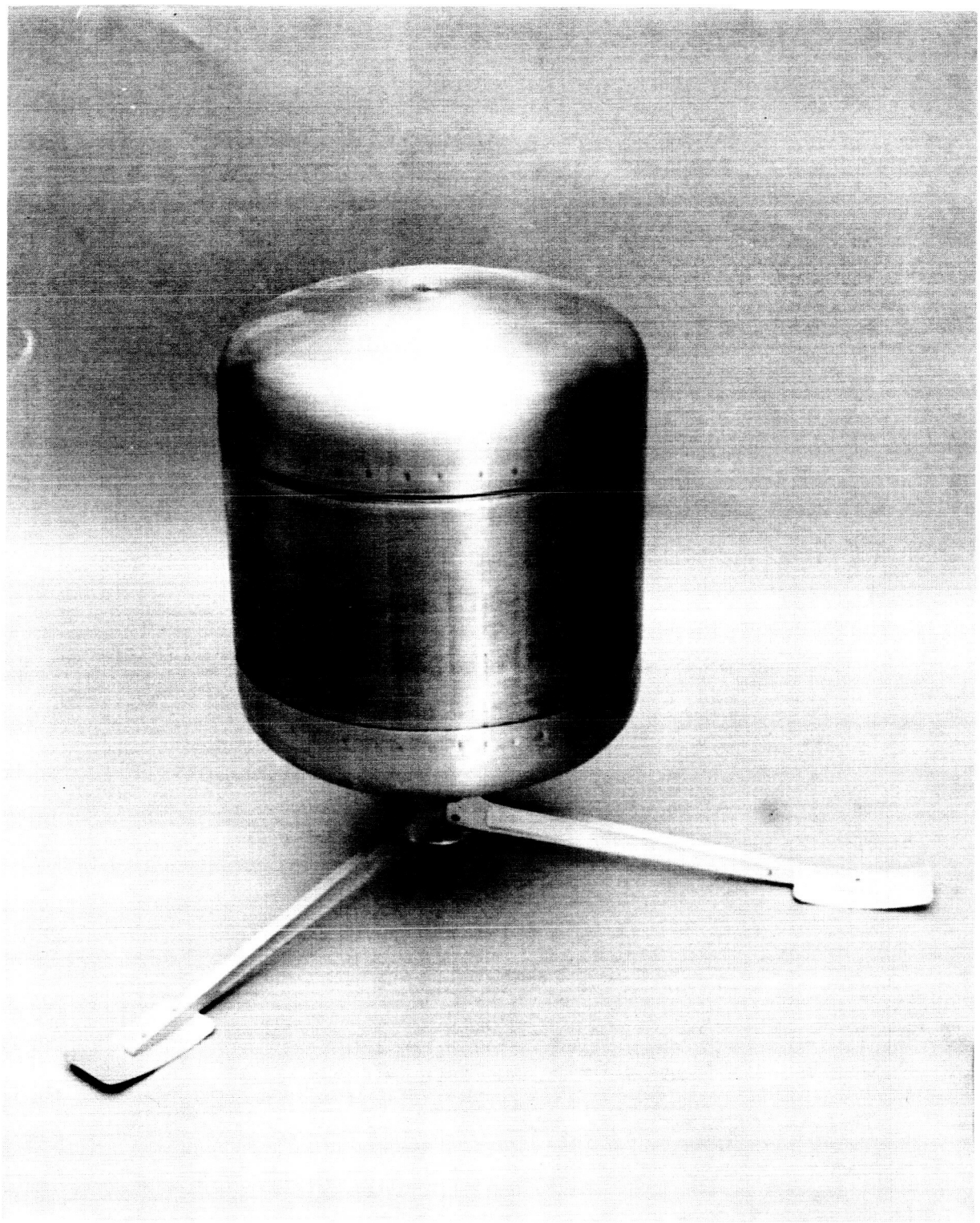


Figure 4c

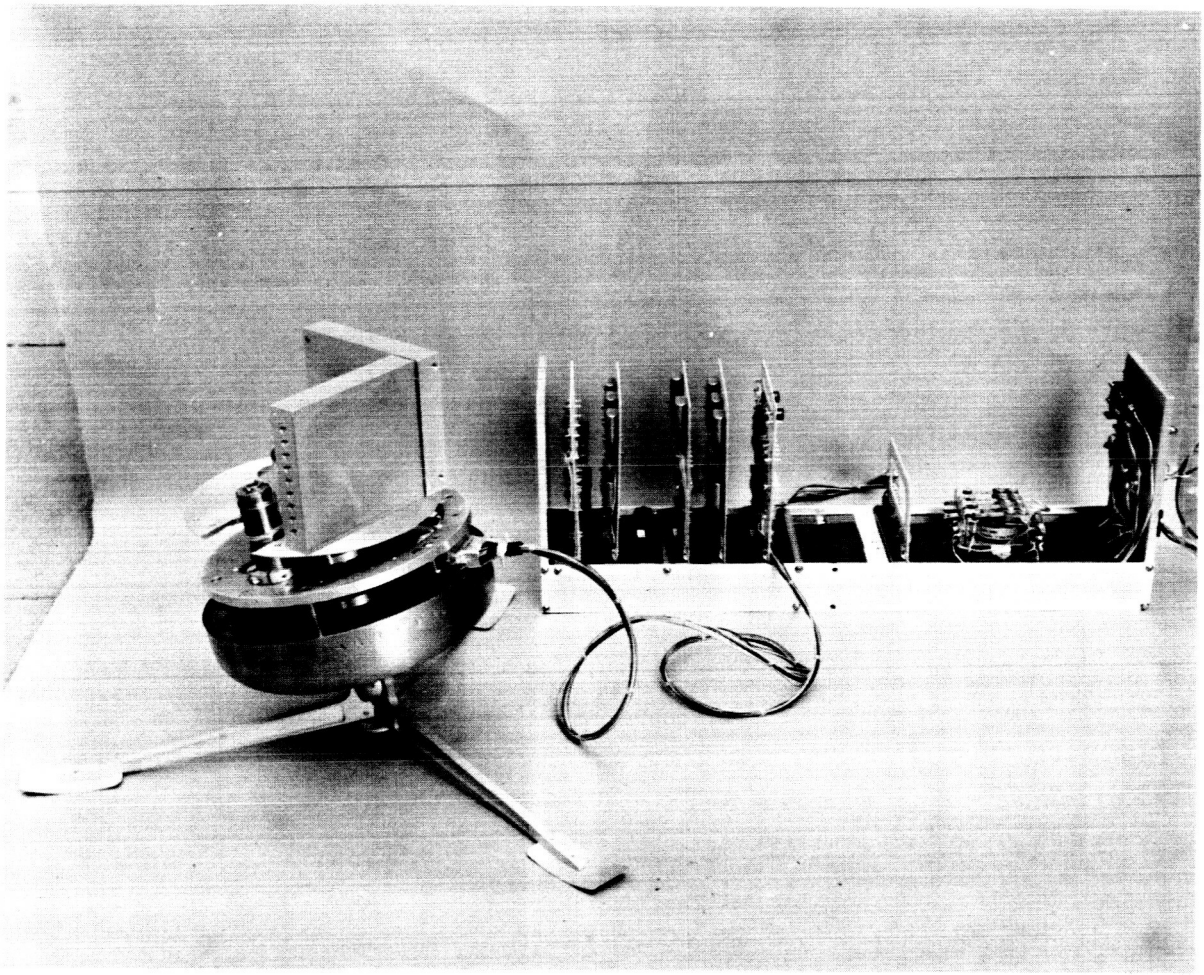
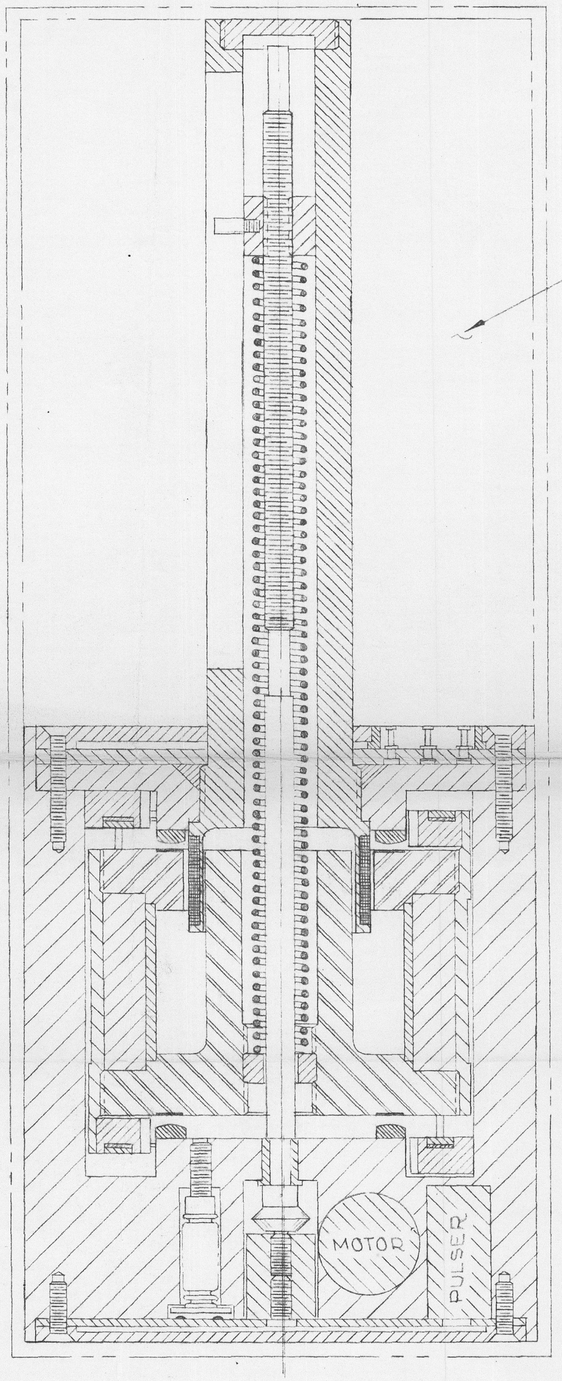
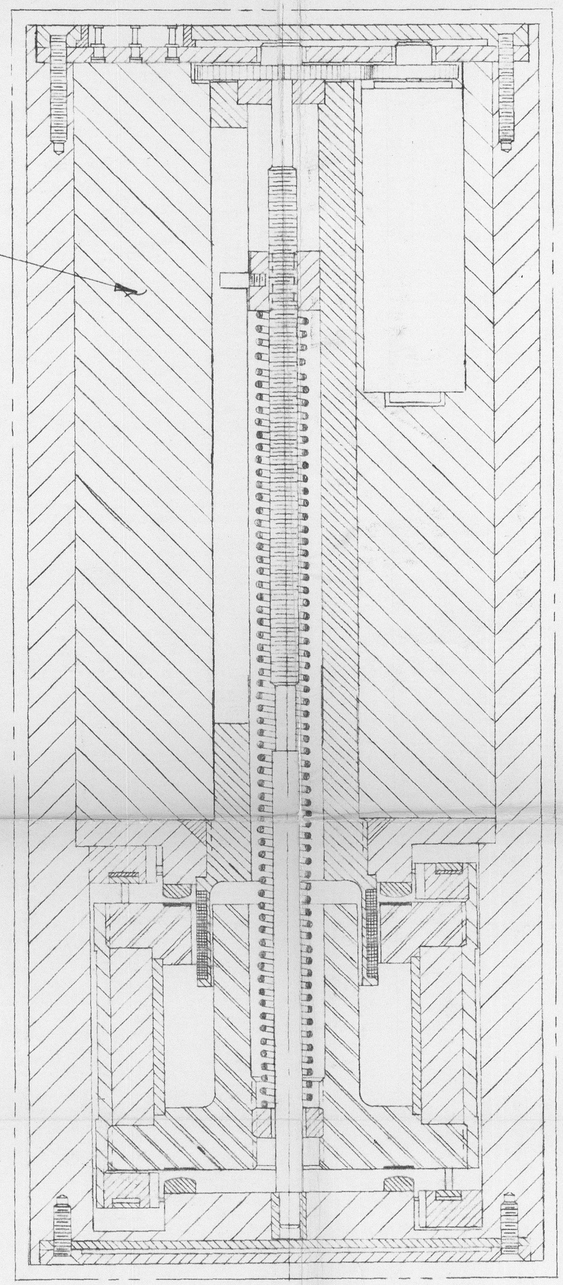


Figure 4d



TESTED CONFIGURATION

SPACE FOR BATTERIES, TELEMETRY ELECTRONICS, ETC.



SUGGESTED ALTERNATE CONFIGURATION

DRAWING NUMBER
10534

LTR	REVISION	DATE

UNLESS OTHERWISE SPECIFIED
TOLERANCES:
.000 ± .002
.00 ± .01
FRACTIONS ± 1/64
ANGLES ± ½°
CONCENTRICITY .005 T.I.R.
BREAK SHARP EDGES AND REMOVE BURRS

NEXT ASSEMBLY

	DRAWN	DATE
	BARBER	12-19-61
	ENGINEER	DATE
	APPROVED	DATE
	CONTRACT	

CALIFORNIA INSTITUTE OF TECHNOLOGY
SEISMOLOGICAL LABORATORY

TITLE
RANGER SEISMOMETER MODIFIED FOR EARTH 'G' OPERATION

FINISH | SCALE 1/1 | C | DRAWING NUMBER 10534